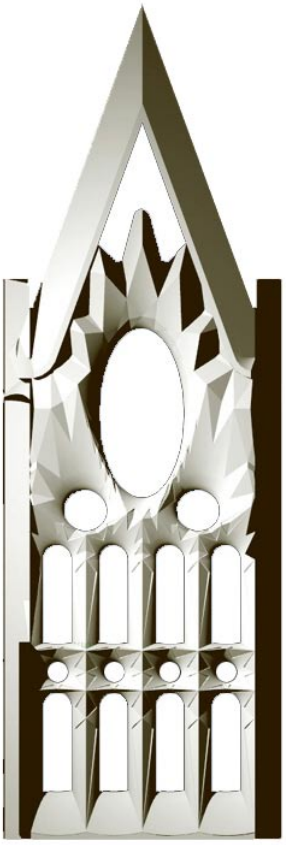
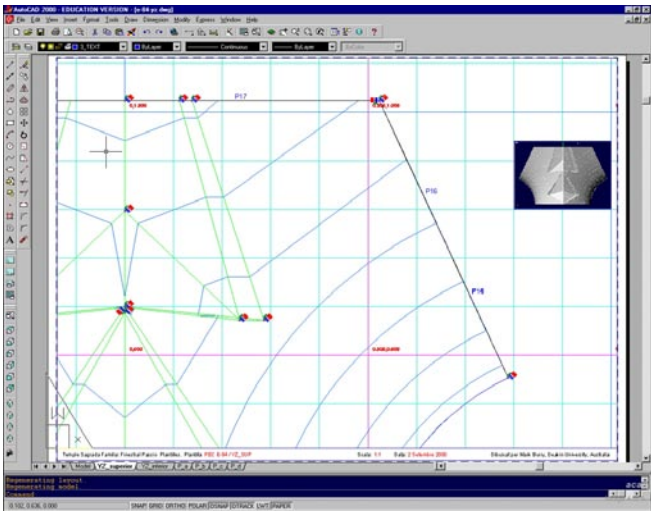


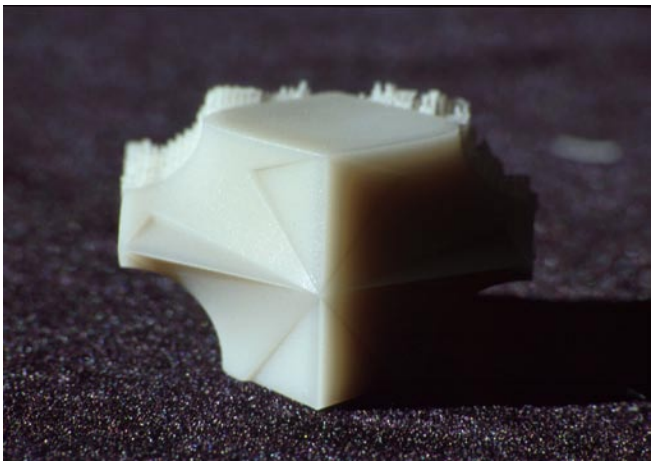
It took 3 months to reach the point where the design team were satisfied with the overall composition for the window. The exterior was fully resolved while the interior had aspects that had to wait until certain measurements were made on site during construction before being finalised. Again, the use of parametric design technology allowed the easy absorption of the new information as it became available with a minimum of repeated work.

Prototyping

To overcome firstly, the distance between design and construction participants; the university team in Australia, the Director and technical office on site and the stone mason in Galicia, and secondly, the unfamiliarity of team members with working directly from digital models without traditional gypsum maquettes to hold, 3D wax printing was introduced as a means of rapid prototyping. This produced exquisitely detailed scaled versions of each individual stone in wax. [Fig] The stone mason developed their own even more rapid means to prototype, building full scale contoured models in polystyrene sheet.

Six months into the project, while the lower quarter of the window was being constructed on site, the second quarter was still being cut in Galicia, the third quarter made into templates in Australia to guide the stone masons and the top quarter was still having the design refined in collaboration between the Sagrada Familia design office and the team in Australia. These models were also a product of the digital process, constructed using sectional profiles (or surface contours) generated at regular intervals parallel to a specified Cartesian plane in *Rhinoceros©.*





Template drawings (traits)

Nearly eight hundred full-size DIN A0 templates were mailed from Australia to guide the stone mason. Line colour was used to distinguish surface generatrices (green), template boundaries between adjacent pieces (black), curved surface intersections (orange) etcetera. The drawings were supported by surface contours at separations of 10cm with coordinates at critical nodes linking the orthographic projections of each piece to a common datum for each piece.

Construction

Not only did the parametric software contribute to a flexible design process in which hard to attain measurements could be incorporated late in the process but it also contributed centroids and crane lifting points to hoist the individual stones into position, perfectly orientated. Following the new system, all the A0 template drawings were employed immediately in Lugo without revision and similarly the pieces were assembled for the first time on site, fitting together without the need for cutting or modification.

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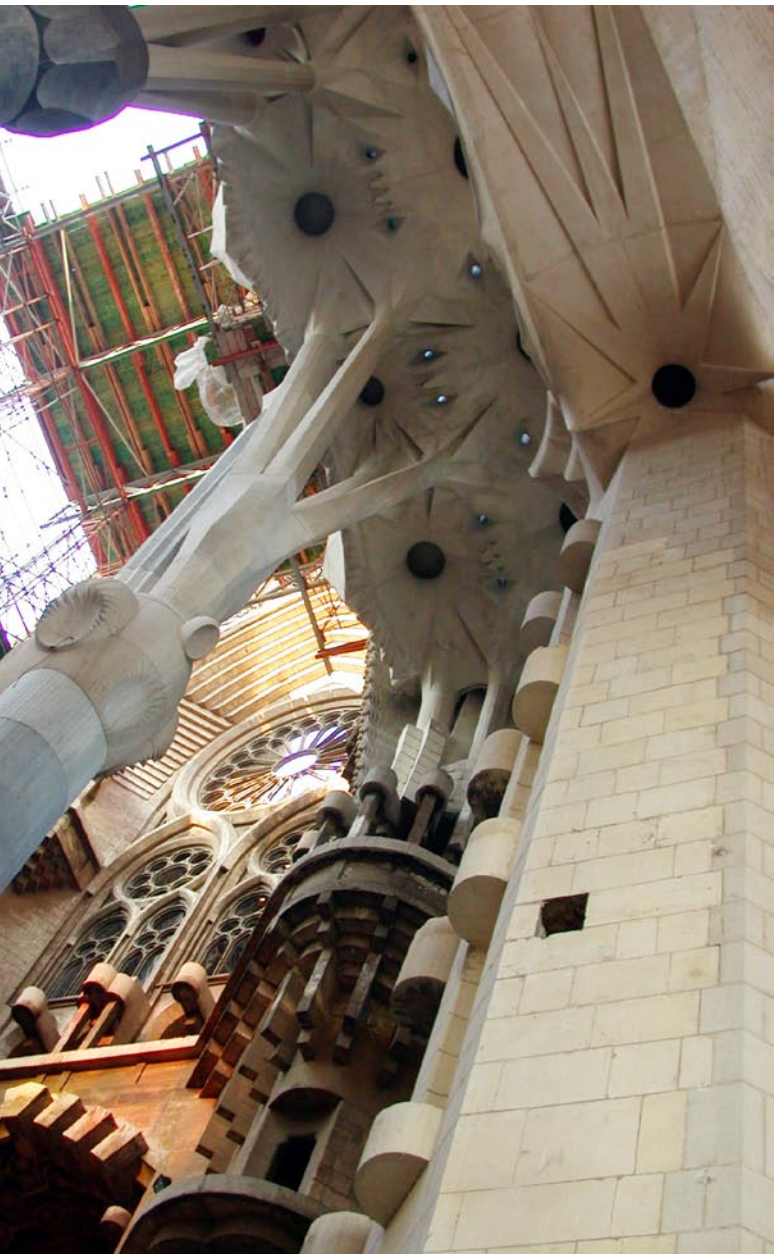
Acknowledgements

The Investigation of Gaudí's final design models for the Sagrada Família church was supported by a Discovery grant from the Australian Research Council 2000-2002.

This work is supported by the Junta Constructora de la Sagrada Família, Barcelona



Mark Burry (born Christchurch, New Zealand in 1957) took up a position at RMIT University as Professor of Innovation (Spatial Information Architecture) in July 2001. Previously he held the Chair in Architecture and Building at Deakin University for five years. He has published internationally on two main themes: the life and work of the architect Antoni Gaudí in Barcelona, and putting theory into practice with regard to 'challenging' architecture. He has also published widely on broader issues of design, construction and the use of computers in design theory and practice. As Consultant Architect to the Temple Sagrada Família, Mark Burry has been a key member within the small team untangling the mysteries of Gaudí's compositional strategies for the Sagrada Família, especially those coming from his later years, the implications of which are only now becoming fully apparent as they are resolved for building purposes. He has been active with the project, an d the museum associated with it since 1979. In a major exhibition on Gaudí's exploration of form staged in Barcelona in 2003 - a principal component of the commemoration of the 150th anniversary of Gaudí's birth, he was the only international member of the exhibitions' Scientific Committee. On February 18 2004 Professor Burry was given the prestigious award .'Diploma I la insignia a l'acadèmic corresponent' and the title Senyor Il. Lustre by la Reial Acadèmia Catalana de Belles Arts de Sant Jordi.